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VpCI-340 CLP vs. FrogLube CLP

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Background:

FrogLube CLP is a product which claims to provide cleaning, lubrication, and corrosion protection to firearms. During live firing with FrogLube, our customer found that the product built up quickly and slowed the action of the gun's trigger mechanism. The residue was reported to be quite difficult to remove and could pose a serious safety risk if failures were to occur in a live fire conflict. Cortec's VpCI-340 CLP was recommended as an appropriate replacement to FrogLube CLP because it does not leave thick residue when applied correctly, it comes as an all-in-one formula (Froglube CLP requires precleaning), and its performance data is publically displayed on its Product Data Sheet (FrogLube CLP presents no quantitative data on its performance).

At the request of our customer, the following test was initiated to determine how the corrosion resistance of FrogLube CLP compares to VpCI-340 CLP.

Sample Received:

- A FrogLube Complete Weapons Care System Pack containing solvent, CLP, and a brush was received unopened in the original packaging.

Method:

Salt Fog Testing, ASTM B117

Materials:

- Carbon steel panels (4 x 5")
- Lab grade methanol
- Aluminum oxide blast media (106 – 212 µm nominal diameter)
- Compressed Air
- VpCI-340 CLP (Batch #90389)
- Paperclips
- Lint-free laboratory cloths

Procedure:

1. Six carbon steel panels were sandblasted with 106 – 212 µm aluminum oxide media to a consistent surface profile.
2. Panels were placed in methanol to remove any contaminants which may remain on the surface.
3. After 5 minutes, the panels were removed from the methanol and allowed to dry.
4. Once dry, three panels were coated with VpCI-340 CLP by pipetting the product onto the panels while the panels were held horizontally
5. Once completely coated with VpCI-340 CLP, the panels were hung from a paperclip in order to drain any excess fluid.
6. The remaining three panels were treated as described on the back of the FrogLube Package:
 - a. The panel surface was sprayed with the kit's accompanying solvent and wiped off.
 - b. Once dry, the panels were coated with FrogLube CLP by applying the product to the panels while the panels were held horizontally.
 - c. Application was aided by the kit's accompanying brush which was used to scrub the product into the panel over 1-2 minutes
 - d. The panels were hung similar to the panels coated with VpCI-340 CLP to allow the excess to drain from the surface.
7. All panels were allowed to drain for 72 hours over the weekend before being placed into the ASTM B117 salt spray chamber
8. The panels were photographed each day to evaluate the rate of corrosion propagation.

9. All panels were removed after 72 hours in the salt spray chamber.

Results:



Figure 1: The panels treated with VpCI-340 CLP (top) and FrogLube CLP (bottom) after 26 hours in ASTM B117 salt spray conditions.



Figure 2: The panels treated with VpCI-340 CLP (top) and FrogLube CLP (bottom) after 48 hours in ASTM B117 salt spray conditions.



Figure 3: The panels treated with VpCI-340 CLP (top) and FrogLube CLP (bottom) after 72 hours in ASTM B117 salt spray conditions.

Interpretations:

The results of this evaluation show that FrogLube CLP did not significantly prevent corrosion on steel panels in ASTM B117 salt spray conditions. On the other hand, VpCI-340 CLP performed quite well at resisting corrosion in these conditions by only allowing a small amount of corrosion to develop after 72 hours of exposure.